The Nature of Science in the Media

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Abstract

The purpose of this paper is to find evidence of the Nature of Science(NOS) Matrix as put forth by the Next Generation Science Standards (NGSS) in the public media. The NOS Matrix is as follows (NGSS 2013 p.4)

1. Scientific Investigations Use a Variety of Methods
2. Scientific Knowledge is Based on Empirical Evidence
3. Scientific Knowledge is Open to Revision in Light of New Evidence
4. Scientific Models, Laws, Mechanisms, and Theories Explain Natural Phenomena
5. Science is a Way of Knowing
6. Scientific Knowledge Assumes an Order and Consistency in Natural Systems
7. Science is a Human Endeavor
8. Science Addresses Questions About the Natural and Material World

I have reviewed the article “Third Gravitational Wave Detection, From Black-Hole Merger 3 Billion Light Years Away” by David Overbye and will show evidence of three, four, and eight.

The Nature of Science in the Media

The Nature of Science (NOS) is quite simply observing and explaining the phenomena that surrounds all of us. As a science teacher, this process is almost second nature but teaching students to observe and use the true NOS is quite a challenge. Students want answers. True, but could part of the problem be how the media disseminate scientific information? In this paper, I will review the article “Third Gravitational Wave Detection, From Black-Hole Merger 3 Billion Light Years Away” by David Overbye and look for evidence of three of the (NGSS, 2013) basic understandings about the nature of science: Scientific Knowledge is Open to Revision in Light of New Evidence, Scientific Models, Laws, Mechanisms, and Theories Explain Natural Phenomena, and Science Addresses Questions About the Natural and Material World(p.4).

According to NGSS (2013), in science, when new data is revealed, old conclusions must be revised(p.4). In Overbye’s (2017) Dr. Reitze is quoted,”That;s not surprising, at some point he is going to be wrong, and we’ll be looking. Dr. Reitze was referring to Einstein and his Theory of Relativity. The quote expresses the true nature of science by alluding to the fact that as technology and new theories are developed, someday, Einstein will be disproved. Another example of this basic understanding occurred when (Overbye, 2017) Dr. Reitze explained, scientist originally thought when black holes merged their dance would be aligned, “like a pair of gold medal skating dancers at the Olympics.” As data is analyzed, the new theory is that the merger (Overbye, 2017) “was not a simple waltz, it was more like a

couple of break dancers," Although there were other examples I felt these two show the author was indeed in tune with the NOS.

Einstein's Theory of Relativity is probably the most well-known theory used to explain many of the phenomena found in nature and space. In the NGSS (2013) another of the basic understanding is that scientific laws and theories explain the phenomena found in the world. According to Redd (2017), "Einstein's Theory states that massive objects cause a distortion in space-time" and "light around a massive object is bent, such as a black hole (par. 1 &7)." This phenomenon was explained by Eisntein's theory and validated by the scientists in Overbye's article again staying true to the NOS.

The final basic understanding I want to address (NGSS 2013) is science addresses questions about the natural world (p.4). Essentially, this part of the matrix means; the more we learn, the more we realize there is so much more to learn. This is made very evident when a scientist in Overbye's (2012) article queried, "How were such large black-hole binaries created? How did they form? (par 22). On the eve of such an amazing discovery the scientist were looking at all of the unanswered questions involved with the new data, pushing science to address more questions about the natural world.

To conclude I would say the one thing this article did to support the NOS was it made me want to dig deeper into the topic. I spent a good deal of time down the "rabbit hole" researching and learning more about black-holes. I also found that the more I tried to pigeon hole my examples

into one part of the matrix the more I realized that most of my examples could fit into multiple if not all eight of the basic understandings. All in all, the assignment as well as the article was a nice journey using the NOS.

References

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